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Final Program Results Report

Madara

“MILK” in Hausa

Funded by USAID / Office of Foreign Disaster Assistance (OFDA)



Development of action plans by dairy groups and cooperatives



Training of micro-entrepreneurs in business management

1. Executive Summary

The MADARA program, or “milk” in Hausa, has built on the achievements of the OFDA-funded PASTORAL I/II programs (March 2011-September 2013) and the *Wadata Makiyaya* (June 2013-June 2014) program by enhancing food security and strengthening the livelihoods of vulnerable households in the Filingué Department, Tillabéri region of Niger. The program has helped to meet the early recovery needs and rebuild the livelihoods of more than 32,000 beneficiaries (4,666 households) over the course of 25 months, while making significant strides toward strengthening the dairy value chain in Filingué.

Under Sector 1, Agriculture and Food Security, MADARA undertook interconnected activities designed to improve the health and productivity of livestock, including training in improved livestock management practices for 1,162 livestock owners, training and equipping of 15 animal health workers, rehabilitation and management of 840 hectares of degraded pastureland, and increasing the availability of fodder. Under Sector 2, Economic Recovery and Market Systems, the program focused on providing support to new and existing businesses and cooperatives both within and outside of the dairy value chain. This support took the form of grants and training for 174 micro-enterprises, training and material support, including the construction of processing centers, for seven dairy cooperatives and six transformation groups, and support for the creation of six new animal feed banks. MADARA also provided more than \$270,000 in cash to vulnerable households through more than 100,000 person-days of Cash for Work and Cash for Planting activities. Finally, under Sector 3, Nutrition, MADARA trained and worked with 112 local community health and nutrition workers and 32 mid-wives to promote the “five essential family practices”.¹ This was done through awareness raising sessions, 96 culinary demonstrations, home visits, and the formation of 36 women’s listening clubs, as well as radio messaging and the screening of short films.

The program notched substantial achievements in each of the three sectors in which it focused. Under Sector 1, Agriculture and Food Security, 76% of livestock owners reported improved livelihoods from their livestock, with nearly all attributing this to program interventions. Improved animal health (100% of animals in the survey were vaccinated) and fodder availability (one additional month per year) resulted in larger, more productive herds, with an average increase in production of 1 liter of milk/day/cow. Under Sector 2, Economic Recovery and Market Systems, interviews suggested that micro-entrepreneurs had increased their income by the equivalent of one month’s earnings per year, while investments in new and existing businesses spurred a multiplier effect in target communities, leading to the creation of several additional businesses, particularly relating to animal feed. Under Sector 3, Nutrition, in addition to the achievements noted above, MADARA oversaw an increase in the rate of exclusive breastfeeding from 19% at baseline to 42.5% at endline.

Key Results of the MADARA Final Evaluation

An external final evaluation of the program rated the program performance as Satisfactory to Highly Satisfactory. It registered particular success in household food security and nutrition, nearly halving the percentage of households suffering from moderate or severe hunger from the baseline, while also significantly reducing the use of household coping strategies. The rate of children between 6 and 24 months with minimally diverse diets also nearly tripled over the baseline.

¹ Adapted from the World Health Organization’s Essential Nutrition Actions (ENAs) and the Essential Hygiene Actions (EHAs), these include 1) exclusive breastfeeding to six months, 2) breastfeeding to two years with complementary feeding, 3) optimal maternal nutrition practices during pregnancy and lactation, 4) use of formal health facilities, and 5) a focus on household hygiene.

MADARA also encountered several challenges that affected either implementation or the program's ability to fully achieve its objectives. Among the most important were difficulties in orienting producers towards markets and a more professional approach to livestock rearing; water scarcity; lack of access to diversified foods; and high levels of illiteracy among beneficiaries. ***Key lessons learned included the necessity of addressing water access in all types of programming; the need to link efforts to improve household nutrition to women's livelihoods; the need for cooperatives and processing groups to aggregate production to capture markets; and the importance, for sustainability, to involving government counterparts in the day-to-day operations of the program.***

2. Program Overview

Large parts of the Nigerien population have been affected by severe food insecurity in the last decade, particularly during 2005, 2008, 2010 and 2012, after a combination of drought, irregular rainfall and flooding decimated crops and forage. The pattern repeated itself in 2013 with the early arrival of the rains, followed by a prolonged period of drought that negatively affected both the production of cereals and the regeneration of natural fodder. The Filingué department, where livelihoods are centered on agro-pastoral activities, was one of the departments most affected by the recent drought. An estimated 23.4% of the population in this department was classified as moderately food insecure in November 2013, and the risk for food insecurity increased during the lean season of 2014².

The MADARA program was designed to help food insecure households meet their immediate needs and rebuild their livelihoods, while simultaneously strengthening the dairy sector value chain to improve availability and access to nutritious milk products. The MADARA program worked with communities to respond to the need for: 1) Opportunities to rebuild savings and livelihoods following successive crises; 2) Sustainable rehabilitation of pastureland to improve access to fodder; 3) Improved access to nutritious animal feed during the dry and lean season; 4) Strengthened animal health and nutrition, and improved quality and quantity of milk production; 5) Increased availability and accessibility of local dairy products, and prioritization of dairy products for household consumption in order to contribute to improved nutrition and dietary diversity; and 6) Improved hygiene in dairy production, and more sanitary conditions in local markets.

3. Performance Summary

Award-Level Beneficiaries:

Cumulative Period Targeted		Cumulative Period Reached	
Total	IDP	Total	IDP
21,000 (3,000*)	0	32,662 (4,666*)	0

* Total beneficiaries is based on an average of seven members per household; in parentheses is the number of households reached

The MADARA program exceeded its overall beneficiary target by 55.5%, ultimately reaching 4,666 unique households directly, against an original target of 3,000. This is largely due to the inclusion of 1,232 previously non-participating households in the final round of Cash for Work (March – May

²GoN "Enquête National", p. 3.

2016), as the program targeted villages in Filingué commune that had registered cereal deficits of 50% or more against normal harvest levels in the final months of 2015.

SECTOR 1: Agriculture and Food Security

In pursuit of its objective to protect and enhance the productive performance of existing animal assets to improve animal nutrition and strengthen dairy production, the MADARA program implemented a number of linked activities. Activities and outputs are summarized briefly here, with a discussion of targets, performance against indicators, and the findings of the final evaluation beneath the table below.

Training of Livestock Owners in Improved Practices

MADARA target communities identified 133 well-respected individuals (27 women), most of whom were viewed by their peers as model livestock rearers, to serve as Livestock Value Chain Coordinators (LVCCs) for the program. LVCCs participated in training of trainers sessions with the government *services techniques* and subsequently returned to their communities to train their fellow livestock owners on a series of practices designed to improve the health and productivity of livestock, with a particular focus on dairy cows. In total, the LVCCs trained 1,162 additional households on six subjects: 1) cutting and storage of hay; 2) treatment of straw with urea and salt; 3) herd management; 4) fabrication of multi-nutritional blocks; 5) strategic feeding during the dry season and feeding of dairy cows; and 6) hygienic handling of milk.

Rehabilitation of Degraded Pastureland

Through two rounds of Cash for Work (July-August 2014 and March-May 2016) and one round of Cash for Planting (July 2015), the MADARA program facilitated the rehabilitation of 640 hectares of degraded pastureland in the target area through the construction of demi-lune earthworks (designed to retain water and guard against erosion) and the reseedling of 99.34 hectares of this land with more than 24,000 locally-produced tree seedlings.

Creation/Revitalization of Land Management Bodies

MADARA created and trained seven new pastoral land management committees charged with overseeing recently rehabilitated pastoral sites, ensuring that they are protected against local encroachment or encroachment by transhumant pastoralists. In addition, the program revitalized 10 Commissions Foncières de Base (COFOBs), local structures responsible for administration of land sales, purchases and disputes, providing training or retraining as well as instructional posters. Madara also created one new COFOB and monitored the work of three others over the course of the program. During the period in which they were monitored, the 14 COFOBS supported or overseen by the program were responsible for 137 land acts, of which 72% were attributed to newly purchased fields.

Training/Re-training and Equipping of Animal Health Workers

In order to expand the reach of the private veterinary service in overwhelmingly rural Filingué, MADARA trained or re-trained 15 *auxiliaires élevages* (animal health workers - AHWs) and provided them with micro-entrepreneurship grants for the purchase of necessary equipment and medicines. Kits included a clamp, a pair of scissors, an automatic syringe for vaccinations, a Plexiglas syringe and a toolbox. The program carried out regular monitoring of the AHWs in concert with the Department of Livestock (DDE) and the local Private Veterinary Service (SVPP) in order to assure the quality of their work. Monitoring indicated that AHWs treat roughly 8,000-10,000 animals each quarter and earn an average of 50,000 FCFA per month, or a little more than \$40. This is considered a significant success, as this level of income, earned independent of any contribution by the program, is sufficient to maintain their engagement in the work.

Creation of Six Animal Feed Banks

To increase the availability of nutritious animal feed and fodder in the area of intervention, particularly during the dry season, MADARA worked with six dairy cooperatives to establish animal feed banks, providing micro-entrepreneurship grants for the purchase of stock and supporting the construction (through funds from the Vitol Foundation) of storehouses. In total, the program provided around 14,114,000 FCFA (24,000 USD) in support to animal feed banks through grants or construction materials (doors, windows, roofing, etc.).

SECTOR #1 Agriculture and Food Security	<i>Objective: Protect and enhance productive performance of existing animal assets to improve animal nutrition and strengthen dairy production</i>			
Geographic Area (s)	Filingué department, Tillabéri region, Niger			
Beneficiaries Targeted	7,000 individuals (1,000 households)			
Beneficiaries Reached (Cumulative)	8,134 individuals (1,162 households)			
Subsector: Livestock				
INDICATORS	Disaggregated	Applicable	Cumulative Value Targeted	Cumulative Reached
Number of animals benefiting from or affected by livestock activities	N/A	Yes	28,000	26,998
Number of people (disaggregated by sex) benefiting from livestock activities	Male	Yes	3,500	3,986*
	Female	Yes	3,500	4,148*

* Amended to correct a previous error

Although the program registered a shortfall against the target for the first indicator under this objective, it must be noted that there is a significant likelihood that MADARA greatly exceeded its target number of animals benefitting from livestock activities. Given the difficulties in avoiding double-counting, particularly in assessing the achievements of the AHWs, who made a record of their consultations but whose records could not be cross-checked against normal program monitoring data, the estimate of 26,998 animals reached is a conservative one, and represents only the animals owned by the households (1,162) reached through trainings by LVCCs. Given that AHWs reach between 8,000 and 10,000 animals per quarter, it is highly likely that a significant portion of these animals were not owned by households who were the recipients of trainings. However, because MADARA could not confirm that fact with any certainty, it has left the figure as is.

It is also necessary to correct a longstanding error in the counting for the second indicator. Among the 1,162 individuals trained by LVCCs were 715 men and 447 women. A mistake was made in multiplying each figure by the average household size in the area (7 members) and taking the product as the final figure reached for each sex. The proper procedure is to multiply the total number of households reached (1,162) by the average household size (7) and then to apportion the final product (8,134) among men and women according to their respective shares of the population (51% women and 49% men). This is how we've arrived at the corrected figures and can state with confidence that we've reached our target for both men and women under this objective.

Findings from the Final Evaluation

In general, the final evaluation found solid evidence that MADARA had achieved its aims in the Agriculture and Food Security sector, and the evaluators rated achievement of objectives in this sector as Highly Satisfactory-Satisfactory. Evidence from qualitative interviews suggested that livestock health has improved, mortality is lower, and thus herd sizes have increased on average for beneficiaries. Vaccination rates among the livestock of both quantitative and qualitative subjects were 100%. Livestock keepers now have one more month of fodder for their livestock than they had before the program, which allowed for a concomitant extension of the lactation period during the dry season, leading to increased production. There is also evidence to suggest that livestock keepers have adopted many of the practices promoted in training from LVCCs. For example, 100% of those interviewed reported feeding their livestock agricultural residues, and 90% reported providing them with salt licking stones. The quantitative survey found that 58% had purchased supplementary fodder for their animals and 29% had purchased concentrates. Among all promoted practices, only treatment of straw with urea and salt registered low levels of adoption. The evaluators noted several causes for this, while also acknowledging that problems with the uptake of this practice are a worldwide phenomenon.

Overall, 76% of surveyed livestock owners reported improved livelihoods due to their livestock, with almost all attributing this improvement to program interventions, particularly in regards to livestock health and nutrition. Only 10% reported that their livelihoods had worsened. As the figures in Table 1 suggest, evidence from the quantitative survey presents a more mixed picture of program success.

Table 1: Evolution in Key Indicators, Agriculture and Food Security Sector

Indicator:	Baseline Study	Mid-Term Review	Endline
Average daily milk production per cow (l).	3.5	3.5	4.5
1.1. % Seasonal variation of milk volume produced per household = difference of milk volume which is not consumed between dry and rainy season	29.4	NA	69.1
1.2. % Seasonal variation of the value of milk products sold between dry and rainy season	10.59	16.68	53.1

Source: Madara Final Evaluation Report

While overall productivity per cow was found to increase by one liter/day over the life of the program, the final evaluation found much greater discrepancies between dry and rainy season production and production value than at baseline (see Table 2 below).

Table 2: Seasonal changes of Milk Quantities Produced

Milk quantities to be procured for sale as assessed per Focus Group	Dry Season (l)	Rainy Season (l)	Total (l)	Difference between dry and rainy season (l)	Percentage of difference from the total (%)
Baseline Study	1,800	3,300	5,100	1,500	29.4
Endline Study	1,020	5,580	6,600	4,560	69.1

Source: Madara Final Evaluation Report

This contradicts the evidence found in qualitative interviews, which suggested that increased fodder availability had cushioned the impacts of the dry season. Overall, findings from this sector point toward increased long-term production due to improved health, feeding, and management of livestock: it is not clear why this should have resulted in a reduction in dry season production. However, the authors of the final evaluation report suggest this may reflect difficulties in accurately distinguishing the seasons in the presence of the considerable effects of climate change.

SECTOR 2: Economic Recovery and Market Systems

The MADARA program worked with existing entities and enterprises, and supported new groups and micro-entrepreneurs in pursuit of its objective in the sector of restoring the livelihoods of vulnerable households and improving access to affordable dairy products through strengthening of the dairy value chain. Cash for Work and Cash for Planting efforts to provide temporary employment also fall under this sector's umbrella. Activities and outputs in the sector are summarized briefly here, with a discussion of targets, performance against indicators, and the findings of the final evaluation beneath the table below.

Financial and Technical Support for Micro-entrepreneurs

Among the close to 500 proposals received for financing of business ideas, the program ultimately selected 174 of the most well-supported, well-reasoned and realistic for funding. Micro-enterprises (MEs) received one or two grants depending on: 1) at what point in the program they applied for funding; and 2) the results of an evaluation conducted after the initial disbursement of funds. The 174 MEs were composed of 568 individuals (54% women), and grants disbursed totaled 122,224 USD. Recipients included AHWs, dairy cooperatives operating animal feed banks, dairy processing groups, other businesses in the dairy value chain, and non-dairy related businesses. More than 300 individuals representing all 174 MEs received training in business management principles from Madara's partner Asusu S.A., a national micro-finance organization. Asusu's field agents also worked closely with all MEs to open bank accounts and to provide post-grant monitoring and technical support.

Creation and Support of Dairy Cooperatives and Dairy Processing Groups

Madara-Funded Studies of the Dairy Value Chain

MADARA commissioned two studies with important implications for actors in the dairy value chain. The first, a participatory market study conducted by CESAO, a Nigerien consulting firm, clearly revealed the significant demand for raw milk in Niger and the substantial production potential in the Filingué department, while identifying challenges impairing the ability of local supply to meet demand. The second, a marketing study of the tchoukou cheese produced by dairy processing groups that was carried out by local firm Sara Consult, confirmed the market potential of the cheese while simultaneously outlining the steps necessary for groups to take in order to improve their position in the market.

As an essential part of its support to the strengthening of the dairy value chain, MADARA supported two existing dairy processing groups and one existing dairy cooperative in the zone of intervention, while establishing five new groups and five new cooperatives over the course of the program. It supported each of the groups and cooperatives with a series of trainings in cooperative principles, business management and hygienic standards for milk handling. In addition, it trained all 180 group members (all women) on cheese quality and presentation to improve the uniformity of production processes and the final product, and thirty

additional members also participated in a study tour to learn new production techniques. Dairy cooperatives received ME grants to stock animal feed banks, while groups received grants to purchase equipment for dairy processing centers (see below).

Construction/Rehabilitation of Dairy Processing Centers

With complementary funding from the Vitol Foundation, MADARA rehabilitated one existing and constructed four new dairy processing centers. Each center, designed jointly with the Departmental Directorate of Rural Engineering (DDRE) based on an existing center, included three rooms: one for the transformation of milk into cheese, one for safe storage of milk, and an office equipped with a table and three chairs. In addition, cold chain equipment was installed in each center: two solar panels, two batteries, a solar-powered refrigerator with a capacity of 165 liters, and accessories. The new centers are facilitating the professionalization of dairy processing groups, allowing for storage and uniformity of production in a sanitary environment.

Temporary Employment

Through Cash for Work and Cash for Planting activities, MADARA provided much-needed income to vulnerable households in Filingué during several periods of food insecurity resulting from poor harvests. In July and August 2014, 1,500 households benefitted from 21 days of Cash for Work activities, while in July 2015 1,681 households (including the 1,500 previous households) benefitted from three days of Cash for Planting. Finally, from March - May 2016, 1300 households, more than 1,200 of which were new to the program, benefitted from 54 days of Cash for Work. In total, the program funded 107,700 person days of work, distributing 271,876.78 USD in cash. According to a distribution monitoring study carried out in April 2016, 95% of cash received was spent on food.

SECTOR #2 Economic Recovery and Market Systems		Objective: Restore livelihoods of vulnerable households and improve access to affordable dairy products for communities in the Filingué department through strengthening of the dairy value chain		
Geographic Area (s)		Filingué department, Tillabéri region, Niger		
Beneficiaries Targeted		21,000 individuals (3,000 households)		
Beneficiaries Reached (Cumulative)		22,750 individuals (3,250 households)		
Subsector 2.1 Livelihoods Restoration				
INDICATORS	Disaggregated	Applicable	Cumulative Value Targeted	Cumulative Reached
Number of people (disaggregated by sex) assisted through livelihoods restoration activities	Male	No	1,575	878
	Female	Yes	1,575	718
Percentage of beneficiaries reporting their livelihoods restored within three to six months after receiving support	N/A	Yes	90%	74%
Total USD amount channeled into the program area through sub-sector activities	N/A	Yes	\$7,500	\$8,335
INDICATORS	Disaggregated	Applicable	Cumulative Value Targeted	Cumulative Reached
Number of people assisted through new livelihoods development activities, disaggregated by sex	Male	Yes	1,400	1,889
	Female	Yes	1,400	2,071
Number of new MSEs started	N/A	Yes	400	174*

Percentage of people (disaggregated by sex) continuing in their new livelihoods by program completion	Male	Yes	90%	75%
	Female	Yes	90%	83%
Total USD amount channeled into the program area through sub-sector activities	N/A	Yes	\$124,000	\$122,224
INDICATORS	Disaggregated	Applicable	Cumulative Value Targeted	Cumulative Reached
Number of people employed through Cash-for-Work activities, disaggregated by sex	Male	Yes	1,050	2,095
	Female	Yes	450	1,262
Average total USD amount per person earned through CFW activities	N/A	Yes	\$134	\$120 ³
Total USD amount channeled into the program area through sub-sector activities.	N/A	Yes	\$201,000	\$271,876.78

*This is a correction of the figure stated in the finally quarterly report. Unfortunately, it included a double-counting of six micro-entrepreneurs. 174 is the correct number.

As can be noted from the table above, MADARA's performance in meeting targets for relevant indicators was mixed, with the program exceeding some targets while falling short on others. Much of this can be attributed to a shifting of the intensity of focus among sub-sectors and among specific beneficiaries. For example, the program only reached 1,596 beneficiaries against a target of 3,150 for livelihoods restoration activities, while reaching 3,960 beneficiaries against a target of 2,800 in new livelihoods development, reflecting a decision to focus more heavily on new livelihoods and businesses in a context in which the demand for starting new businesses far exceeded that for support to existing businesses. Likewise, the large shortfall in the number of new MEs created (174 versus a target of 400) can be explained by the decision to support, in addition to individual micro-entrepreneurs, MEs composed of groups, which is how the program ultimately reached 568 households under this sub-sector. Given the support for groups, average grant sizes were also larger than initially envisioned, but ultimately spending for each sub-sector was roughly at expected levels.

Unfortunately, the program was not as successful in ensuring the durability of new livelihoods or the restoration of existing livelihoods as it had anticipated. In both cases, targets of 90% were likely too high, given that virtually all of the livelihoods supported were business-based, and even among micro-entrepreneurs, the rates of failure among businesses can be significant. With that in mind, the fact that 79% of program-supported MEs were still in operation at the end of the program (excluding the 19 MEs who received their initial grants in the final quarter), in spite of a number of deaths and cases of seasonal migration, seems a solid achievement.

In regards to Cash for Work, Mercy Corps far exceeded its target numbers after adding a second round of Cash for Work during the No-Cost Extension period of the program (which was possible after Cash for Work was not needed in 2015 given a solid harvest at the end of 2014). This second round targeted more than 1,200 new households, which was necessary given the differing vulnerability profiles for villages households during the two separate crises (2014 and 2016). In the end, the program expended around \$70,000 more than expected on Cash for Work activities, which reflected the substantial need in the wake of severe cereal deficits in several target villages. This was

³ Figure is the total only for this round of Cash for Work and does not include earnings from earlier in the program.

able to be covered by cost savings in other areas of the program, such as on vehicle fuel, office rent and office utilities.

Findings from the Final Evaluation

Achievement of objectives in this sector were rated Satisfactory. Although the evaluators did not collect data on income, they found in qualitative interviews that beneficiaries of the ME portion of the program reported the equivalent of one month of increased earnings post-project. Likewise, women who were members of dairy processing groups reported that their income from cheese-making was greater than that for other activities such as peanut oil extraction and small commerce. The evaluators found that MADARA had diversified income-generation options for target beneficiaries, which had had a multiplier effect in target communities, leading to the creation of new businesses independent of program support. This was especially true of animal feed businesses, and as a result, they were viewed as likely one of the most durable contributions of the program to community well-being. A summary of the transactions of the six animal feed banks is included in Table 3 below.

Table 3: Grants, Withdrawals, Purchases, Sales and Profits within the Feed Business Sector*

Location	Total Grants	Withdrawal		Feed Purchase			% Sold fodder vs. remaining fodder
Village/co operative	FCFA	Total (FCFA)	% of grant	Total (FCFA)	% of total grant	% of withdrawal	%
Tchiolé/ Beidari	882,400	730,000	82,7	1,109,500	125.7	152.0	39.3
Makani .S/Ladabi	3,142,200	3,000,000	95,5	1,800,000	57.3	60.0	24.4
Garin Kimba/ Weltaré	7,780,200	4,750,000	61,1	4,032,500	51.8	84.9	7.6
Tamag./ Niima	2,680,000	2,325,000	86,8	2,250,000	84.0	96.8	1.8
Toukounous /Daddo	2,650,000	1,770,000	66,8	1,375,000	51.9	77.7	0.0
Dinkim/Niyadakokari	2,486,000	600,000	24,1	600,000	24.1	100.0	22.0
TOTAL	19,366,600	12,257,000	63,3	1,106,7000	57.1	90.3	12.5

Source: Madara Final Evaluation Report

*Through March 2016

Data for baseline and endline indicators is presented in the sectoral indicator table above (% of livelihoods restored, % of people continuing in new livelihoods, number of new MSEs started) with one exception: % of households who have consumed milk or milk products during the previous 24 hours. The final evaluation found that only 48.8% of surveyed households reported consuming milk products in the previous 24 hours, as compared to 73% at baseline and 100% during the internal mid-term evaluation. It is unclear what may have caused this steep decline, although it should be noted that the final evaluation was carried out at the end of the dry season, when milk production is

likely at its lowest. However, the baseline evaluation took place at the same time of year, and so a decline of nearly 25% was still registered.

SECTOR 3: Nutrition

In pursuit of its objective to improve uptake of key Infant and Young Child Feeding and optimal maternal nutrition practices, the MADARA program engaged in a number of awareness-raising efforts to improve knowledge and behaviors around nutrition and health. Activities and outputs are summarized briefly here, with a discussion of targets, performance against indicators, and the findings of the final evaluation beneath the table below.

Training of Health and Nutrition Coordinators and Midwives

With an emphasis on promoting the five essential family practices (EFPs), MADARA trained 112 Local Health and Nutrition Coordinators (CLSNs) as well as 32 midwives on the EFPs and communication techniques for behavior change, to support them in their roles as behavior change agents in target communities. CLSNs led community-level trainings and discussions on the EFPs, carried out cooking demonstrations, organized discussion/listening clubs, and made home visits to individual households. The visits were targeted for women who practiced exclusive breastfeeding and complementary feeding in order to provide them with further advice on these practices.

Cooking Demonstrations

As part of its effort to encourage the consumption of nutritionally diverse and rich meals with locally available ingredients, MADARA hosted cooking demonstrations in 16 target villages. Demonstrations of six recipes were held in each village, for a total 96 demonstrations over the life of the program. MADARA particularly targeted pregnant and lactating women and women with children between 6 and 24 months with this activity, as well as the elderly, who are also often charged with food preparation. Cooking demonstration sessions were always coupled with awareness-raising sessions on the EFPs. In total, approximately 519 women and at least 25 men participated in these demonstrations over the course of the program.

Creation of Listening Clubs

In order to increase the channels of communication aimed at behavior change, the program established 36 women's listening clubs across 16 target villages. Each listening club had 20 members and was given a solar radio equipped with a memory card containing recordings of key messages on the EFPs. Through these clubs, the program aimed to increase each member's knowledge and awareness on essential family practices, and subsequently encouraged her to raise the awareness of five other women in her village on these issues, thereby gaining a much larger audience.

Multi-Media Awareness Campaign

The program drew on locally available media channels in a further effort to communicate information on the EFPs to its target audience. It drew heavily on local radio airtime, signing contracts with Filingué rural radio to air 90 key messages (45 in Hausa and 45 in Zarma) across the 24 target villages. It also organized two, one-hour radio debates on the EFPs, with partners from the sanitary district of Filingué and a religious opinion leader participating. The broadcasts of both debates were integrated into radio programming and were broadcast a total of five times each. Finally, more than 300 women viewed films on the EFPs screened by MADARA in four target villages.

SECTOR #3 Nutrition	<i>Objective: Improve uptake of key Infant and Young Child Feeding and optimal maternal nutrition practices</i>			
Geographic Area (s)	Filingué department, Tillabéri region, Niger			
Beneficiaries Targeted	21,000 individuals (3,000 households)			
Beneficiaries Reached (Cumulative)	17,675 (2,525 households)			
Subsector: Infant and Young Child Feeding and Behavior Change				
INDICATORS	Disaggregated	Applicable	Cumulative Value Targeted	Cumulative Reached
Number and percentage of infants 0 through <6 months of age who are exclusively breastfed	N/A	Yes	700	654*, 42.5%
Number and percentage of children 6 through <24 months of age who receive foods daily from 4 or more food groups (to achieve minimum dietary diversity)	N/A	Yes	1,500 (40%)	769**, 50%
Number of people receiving behavior change interventions, disaggregated by sex and age (0-11 months, 1-4 years, 5-14 years, 15-49 years, 50-60 years, 60+ years)	Age	Female	Male	F/M***
	0-11 months	450	450	431/415
	1-4 years	2,100	2,100	2,220/2,132
	5-14 years	5,000	4,000	3,741/3,594
	15-49 years	3,200	2,600	2,534/2,434
	50-60 years	340	250	47/46
	60+ years	310	200	41/40
Number and percentage of children 6 through <24 months of age who receive foods daily from 4 or more food groups (to achieve minimum dietary diversity)	Total	11,400	9,600	9,014/8,661

*Calculated by estimating the total population (1,538)--based on population distributions for Filingué commune--of children within target households born after the launch of the program who had reached at least six months of age by the end of the program and multiplying this population by the rate of exclusive breastfeeding measured in the endline evaluation.

** Calculated by estimating the total population (1,538)--based on population distributions for Filingué commune--of children within target households between 6 and 24 months of age at the time of the endline evaluation, and multiplying this population by the rate of minimum dietary diversity measured at that time.

***Calculated by taking the total number of individuals reached (number of HHs reached X 7 members/household), apportioning them among each age category according to the age distribution in Filingué commune, and then disaggregating within age categories using the gender distribution in the area of intervention—51% female and 49% male.

Overall, the program reached 17,675 beneficiaries in the sector. This final figure represents a correction to what has been indicated in previous reports, as those numbers did not take into account the number of households reached through regular sensibilization sessions carried out by

CLSNs at the village level, the activity that reached the largest number of households by a substantial margin. One obvious cause of the shortfall of beneficiaries reached (versus a target of 21,000) in the sector was the fact that the program ultimately carried out nutrition activities in only 16 of its 24 target villages. This was done in order to avoid the duplication of preventative nutrition activities in eight target villages already covered by a peer agency. Through widely-attended sensibilization sessions and sanitation campaigns that mobilized entire villages to carry out cleaning activities, MADARA reached virtually 100% of the households in target villages with activities in this sector.

Rates of exclusive breastfeeding increased from 19% at baseline to 42.5% at endline. Although there were some discrepancies in routine monitoring and in the mid-term, the endline figure still represents a more than doubling of the overall rate of exclusive breastfeeding. Likewise, the program notched an impressive increase in the percentage of children between six months and two years of age with a minimum dietary diversity (receiving foods daily from four or more food groups), from 18% to 50%, surpassing its target of 40%. The program did fall short in terms of the numbers of children reached for both indicators, although in the case breastfeeding, it achieved a very respectable 93% of its target. In addition, the target of 1,500 children between the ages of 6 and 24 months with a minimum dietary diversity was estimated too high. Given that this number offers just a snapshot in time, and based on our calculation (drawn from age distribution figures for Filingué commune, which were made available after target setting) of the population of children (1,538) of this age in target households at the time of the endline evaluation, meeting this target would have required nearly 100% of target children to have exceeded the threshold of a minimum dietary diversity.

Findings from the Final Evaluation

The final evaluation rated Madara's achievement of its objectives in the Nutrition sector as Satisfactory-Moderately Satisfactory. Overall, the evaluators noted that changes in behaviors were lagging behind that of knowledge and attitudes, and that the program needed more time to solidify its achievements and to bridge the gap between knowing and doing. However, as can be noted in Table 4 below, the program reached some of its biggest successes in the nutrition and food security sector.

Table 4: Evolution in Key Indicators, Nutrition Sector

INDICATORS	Baseline	Midterm Review	Endline
Average Household Coping Strategy Index (CSI) Score	17	20	12.7
Average Household Dietary Diversity Score (HDDS)	6	6	4.9
Women's Dietary Diversity Score – WDDS (specifically, number of food groups consumed by women of reproductive age 15-49 years)	5	4	5
% of households with moderate or severe hunger (Household Hunger Scale -- HHS)	31%	25%	16.7%

Source: Madara Final Evaluation Report

Significant reductions in household hunger and use of coping strategies (coping strategies represent a proxy for food insecurity—thus, the higher the CSI Score, the more food insecure the household) occurred among MADARA’s target households over the course of the program, with the rate of households experiencing moderate or severe hunger nearly cut in half. A decrease in the average Household Dietary Diversity Score (HDDS) from 6 to 4.9 may at least be partially explained by declines in the consumption of milk products during the period surveyed, as well as a general lack of availability of certain varieties of foods, which was an overarching problem noted by the evaluators. Women’s dietary diversity remained flat, but it may be viewed as an accomplishment of the program (and perhaps a result of MADARA’s work to target women with new livelihoods and livelihoods restoration activities) that it improved vis-à-vis the overall dietary diversity of households, such that women’s dietary diversity is now on the same level as the rest of their household.

Data on rates of exclusive breastfeeding and minimally diverse diets for 6 to 24-month olds is presented in the sectoral table above. Regarding exclusive breastfeeding, one note of caution was sounded by the evaluators in the case of mothers with sub-standard nutrition or limited access to sufficient potable water. They noted that recommendations to exclusively breastfeed in these cases can be counterproductive for both mother and child, given that babies are unlikely to get necessary levels of nourishment from breastmilk alone if the mother is malnourished or dehydrated.

4. Key Challenges/Constraints

MADARA confronted a number of physical/environmental, social, and structural challenges that constrained its ability to fully achieve its objectives. The most important factors contributing to the challenges were:

- **The transition from traditional livestock practices to a more market-oriented, business-focused outlook.** Among the population of livestock owners and dairy cooperatives with which MADARA was working, the efforts of the program to professionalize practices and to push beneficiaries to orient themselves to the market met with limited success, as the inertia to maintain the status quo and to passively preserve traditional practices frequently overcame the drive for change. What is needed is additional time, as such changes cannot be expected to take hold in only two years and transforming habits/routines/behaviors takes a significantly longer time.
- **Limited access to water.** Meager water infrastructure in MADARA’s zone of intervention directly or indirectly impacted nearly all of its activities. In particular, it limited animal productivity and health (through a lack of drinking water and ability to cultivate fodder), household dietary diversity (by limiting or preventing dry season vegetable production or significant kitchen gardens), household hygiene and hygienic production of milk.
- **Lack of availability of diverse foods.** Many beneficiaries were lacking access to diverse food sources, particularly fruits and vegetables that are not or cannot be grown in local fields and are not available in local markets. This hindered the ability of the program to improve household dietary diversity and the ability of households to apply the EFPs (particularly those concerning the nutrition of small children and pregnant/lactating women). A major barrier to accessing diverse foods is the limited access to water.
- **High rates of illiteracy among beneficiaries.** Although all trainings conducted under the aegis of the program were tailored to illiterate individuals, program agents noted that illiterate beneficiaries were less likely to apply practices and knowledge learned in training, suggesting that illiteracy is a major constraint to behavior change even when care is taken to address the needs of these individuals.

- **Long distances to health centers.** Not only did the relative scarcity of health infrastructure and formal healthcare in MADARA's zone of intervention hinder the capacity of target households to implement one of the EFPs (use of formal health facilities), but it also reduced the overall health profiles of beneficiaries, which hampered productivity and their ability to participate meaningfully in program activities.
- **Securing rehabilitated land from transiting pastoralists.** The program rehabilitated more than 600 hectares of degraded pastureland for sustainable, future use, but the land management committees put in place by MADARA struggled to protect it from encroachment and exploitation by pastoralists transiting through the region. This issue might be addressed in the future by affording some official status to committee members in their communities and/or pursuing awareness campaigns for pastoralists.

5. Key Lessons Learned

The lessons outlined below are derived from MADARA staff, the final evaluation of the program, the dairy value chain study and the cheese marketing study.

- **Water scarcity issues must be addressed to drive long-term, sustainable improvements in food security and resilience.** Without sufficient access to water to ensure human and livestock health, permit dry season vegetable cultivation, and increase fodder production, the long-term impacts of nutrition, sanitation and livestock productivity activities in the Filingué region will be uncertain. *Water is a cross-cutting issue that must be addressed within all early recovery and development programming.*
- **Nutrition interventions and women's livelihood interventions are closely linked.** Attempting to address household malnutrition and dietary diversity without giving women the means—whether through income-generating activities or access to land, water and knowledge to carry out vegetable production—to provide for their households' alimentary needs is insufficient. The two must be addressed in tandem.
- **Animal productivity is improved more rapidly through health than nutrition interventions.** The fastest gains in milk productivity were realized through vaccinations and related health interventions. Nutrition-based improvements relating to the amount, quality, and diversity of feed available were much slower to see success.
- **Government counterparts must be involved in the day-to-day functioning of the project as much as possible.** Although MADARA noted high levels of participation from and cooperation with the government technical services and other state actors, particularly in regards to carrying out training, targeting of beneficiaries and monitoring of some activities to really ensure a successful hand-over of activities requires their more regular involvement. This was particularly noted in regards to government health workers, but is relevant for other state actors as well.
- **Plan and adapt to ensure the inclusivity and success of illiterate beneficiaries engaged in micro-entrepreneurship activities.** Illiteracy seemed to be a particular constraint for micro-entrepreneurs who found the requirements for business plans and to open bank accounts especially challenging. Thus, in the future, these constraints must be better managed to ensure that illiterate beneficiaries can participate just as fully. One may also consider incorporating literacy courses as part of training for micro-entrepreneurs.
- **Address missing links between producers and large-scale processors and retailers in the dairy value chain.** There is a serious disconnect between the production potential in Filingué and the demand for raw milk by Niamey-based processors and retailers. Too much

milk is transformed into low-value products at the household level or wasted for lack of a market link. Creation of a large milk collection center in Filingué linked to a major retailer would go a long way toward opening high-value markets for producers and meeting the demand of sellers.

- **Dairy cooperatives and processing groups should use their strength in numbers to capture markets.** With production still being carried out on a very small-scale, even among cooperatives and groups, producers should consolidate their efforts through formation of unions or similar bodies in order to aggregate production and be more attractive to wholesale buyers. Larger groups of producers would also be able to negotiate better prices for inputs and equipment.

6. Annexes

- Annex: MADARA External Final Evaluation Report